WHAT IS CLAIMED IS:

1.   A signal separation system for separating plural source signals before mixture from mixture signals having said source signals mixed temporally and spatially, comprising:

signal input means for inputting said mixture signals;

signal storing means for storing said input mixture signals; and

signal separation means for extracting the mixture signals stored in said signal storing means and separating said source signals from said extracted mixture signals;

wherein said signal separation means transforms said extracted mixture signals into a linear sum of bases, and separates said source signals using a learning algorithm based on overcomplete representations.

2.   The blind signal separation system according to claim 1, wherein said signal separation means formulates said extracted mixture signals as an operation expression using a basis matrix composed of plural small matrixes which consist of the bases with time symmetry around the time axis shifted, and calculates a mixture matrix to produce said mixture signals by mixing said source signals temporally and spatially, and estimates said source signals to be separated, using said operation expression and the learning algorithm based on said overcomplete representations.

3.   The blind signal separation system according to claim 2, wherein said signal separation means calculates said mixture matrix and estimates said source signals to be separated by correcting a basis located in the middle column of said plural

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small matrixes in accordance with the learning algorithm based on said overcomplete representations when using the learning algorithm based on said overcomplete representations.

4.   A signal separation method for separating plural source signals before mixture from mixture signals having said source signals mixed temporally and spatially, said method including:

a signal input step of inputting said mixture signals;

a signal storing step of storing said input mixture signals; and

a signal separation step of extracting the mixture signals stored at said signal storing step and separating said source signals from said extracted mixture signals;

wherein said signal separation step includes transforming said extracted mixture signals into a linear sum of bases, and separating said source signals using a learning algorithm based on overcomplete representations.

5.   The blind signal separation method according to claim 4, wherein said signal separation step includes formulating said extracted mixture signals as an operation expression using a basis matrix composed of plural small matrixes which consist of the bases with time symmetry around the time axis shifted, and calculating a mixture matrix to produce said mixture signals by mixing said source signals temporally and spatially, and estimating said source signals to be separated, using said operation expression and the learning algorithm based on said overcomplete representations.

6.   The blind signal separation method according to claim 5, wherein said signal separation step includes calculating said mixture matrix and estimating said source signals to be separated by correcting a basis located in the middle column of said plural small matrixes in accordance with the learning algorithm based on said overcomplete representations when using the learning algorithm based on said overcomplete representations.

7.   A blind signal separation program for enabling a computer to perform the blind signal separation method according to claim 4, 5 or 6.

8.   A recording medium that records the blind signal separation program for enabling a computer to perform the blind signal separation method according to claim 4, 5 or 6.